

# ATOMIC ENERGY

# newsletter<sup>®</sup>

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH  
ROBERT M. SHERMAN, EDITOR. PUBLISHED BIWEEKLY BY ATOMIC ENERGY NEWS CO., 1000 SIXTH AVENUE, NEW YORK 18, N. Y.

August 9th, 1955  
Vol. 13...No. 13

Dear Sir:

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A contract may soon be negotiated by the USAEC with Combustion Engineering, Inc., for a prototype of a nuclear reactor to be used in a power plant of one of the next "nuclear" submarines planned by the U.S. Navy. The contract is expected to be for approximately \$10 million. (Other CONTRACT news, p. 2).

Alleging that a nuclear reactor patent it acquired from Enrico Fermi and associates in 1935 (which runs until 1960) has been infringed by the USAEC, and that its position has been damaged by the USAEC putting the patent in the public domain, claim for compensation has now been filed by Philips Lamp (Holland) against the USAEC. The U.S. patent, No. 2,708,656 is offered by the USAEC on a royalty free (non-exclusive) basis to any U.S. citizen or corporation. Philips owns rights in Holland, Germany, France, England, Belgium, Spain and Austria, on the claims embodied in this patent, through filing it has done in these respective countries.

Babcock & Wilcox, (U.S.) active in the U.S. and England in atomic energy work, has now reported net earnings in the first 6-months of this year equal to \$4.43 a common share, compared with profits of \$4.34 a share in the corresponding period of 1954. This was in the face of a decline in sales from approximately \$152 million to approximately \$116 million. (The atomic energy earnings constituted a small portion of this amount.) (Other FINANCIAL news, p. 5).

In the first press forgings of uranium metal made on a commercial scale (although it is still in the pilot plant stage), uranium ingots are now being forged by the Heppenstall Co., Pittsburgh, Pa. The uranium is heated in a salt bath, and forged in a 1,000-ton press by means of "V" dies. (Other PRODUCT news, p. 5).

Nuclear metallurgy is now to be discussed at two sessions of the annual Fall meeting of the Institute of Metals Div., American Institute of Mining & Metallurgical Engineers, being held in Philadelphia, Oct. 17-19. The meeting will hear E. R. Jette, Los Alamos Scientific Laboratory; H. A. Wilhelm, Iowa State College; and F. G. Foote, Argonne Nat. Lab., discuss the physical metallurgy of plutonium, thorium and uranium. Alvin M. Weinberg, Oak Ridge Nat. Lab., will describe reactors now being developed, and J. P. Howe, North American Aviation, will explain material problems in such reactors.

Indicating the high level of activity in U.S. uranium exploration are the continuing applications coming into the Defense Minerals Exploration Administration in Washington for Government assistance in such exploratory work.

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ATOMIC ENERGY BUSINESS REPORTS...

NEW ATOMIC ENERGY UTILITY IS PLANNED:- A central station power plant using a homogeneous-type nuclear reactor is now to be built by Pennsylvania Power & Light Co., Allentown, Pa. Output will be 150,000-kw; Westinghouse Electric has been given a contract by PP & L to design and furnish the nuclear reactor and its related electric generating equipment. Financing for the (estimated) \$35 million plant will be by PP&L, with an in-service target date of 1962 for the plant. The homogeneous-type reactor was selected after exhaustive studies indicated that a power plant using it as a heat source would be commercially competitive with generating stations using coal or oil. Charles E. Oakes, president of PP&L, said the plant would be for future demand levels, and that it was his "firm conviction" that PP & L would be successful in the venture.

NUCLEAR REACTOR FOR MEDICAL USES TO BE BUILT:- The nuclear reactor which will be used for medical purposes at the radiation therapy center of the Lovelace Foundation for Medical Education & Research, Albuquerque, N. M., is to be built by the Convair div., General Dynamics Corp., according to W. Randolph Lovelace, v-p and executive director of the foundation. The 1,000-kw reactor, to cost about \$2.5 million, will have a new type of neutron cavity which enables a more concentrated beam to be applied to the patient, he further stated. It is expected in operation before the end of 1956.

BUSINESS COMMITTEE MEETS WITH USAEC OFFICIALS:- A newly-organized Machinery & Allied Products Institute committee on atomic energy procurement met in Washington last fortnight with USAEC officials. Discussions covered procurement experiences among MAPI participating companies; present procurement policies and procedures of the USAEC; insurance and indemnification problems; and other problems. Committee members are with firms doing prime or sub-contract work for the USAEC.

ATOMIC ENERGY EXPOSITION FOR NEW YORK:- New York City will be the site of an atomic energy exposition, for the general public, to be held Oct. 20-Nov. 3, 1955. Sponsoring groups are Atomic Industrial Forum, Inc., trade association, its subsidiary Fund for Peaceful Atomic Development, and the Carnegie Endowment for International Peace. Exhibitors will be trade association members of the Forum (showing in New York the exhibits they had previously shown at the Sept. 26-30 Atomic Trade Fair, Washington, D.C.) and certain foreign firms.

RULES OF PRACTICE FOR USAEC-LICENSEES ESTABLISHED:- These proposed rules, which will govern the conduct of proceedings before the USAEC involving licensing and licenses, are now open to comments and suggestions. Information may be obtained from C. G. Manly, Director, Division of Civilian Applications, USAEC, Wash., D.C.

CONTRACTS LET, BIDS ASKED...on nuclear projects...

MULTI-CURIE FISSION PRODUCTS PILOT PLANT:- A \$948,000 contract for facilities for this plant at Oak Ridge Nat. Lab., has been awarded to Malan Construction Corp., L. I. City, N.Y., by the USAEC, for phase I of the project. Phase II, to be awarded on a lump sum basis, will be for installation of specialized chemical separation equipment.

NUCLEAR POWER PLANT:- General Electric Co., Schenectady, N.Y., has obtained the \$45 million contract to build the 180,000-kw dual-cycle boiling reactor plant for Nuclear Power Group, Inc., on the Illinois waterway, 47 miles southwest of Chicago. (Power will be fed into Commonwealth Edison system, with Commonwealth paying \$30 million of the cost. Balance of \$15 million will be from 7 other companies, who, with Commonwealth, are participating in the Group: American Gas & Electric; Pacific Gas & Electric; Union Electric of Mo.; Kansas City Power & Light; Central Ill. Light; Ill. Power; and Bechtel Corp.)

PHYSICAL RESEARCH:- Some 55 contracts for physical research, of which 8 are new and 45 renewals, have now been given by the USAEC to U. S. universities and private research institutions. The contracts (for non-secret work) were generally for a period of one year. New contracts covered research at the U. of Chicago on science of materials (\$50,000); work at Purdue Research Found. on diffusion in liquid metals (\$7,720); etc.

PADUCAH GASEOUS DIFFUSION PLANT:- Bids have now been asked by the USAEC, Paducah, Ky., under inv. 151-56-59, for performing all work required for process construction at project C-340, at the Paducah Area. Bid closing date is Sept. 30, 1955.

ATOMIC ENERGY IN THE UNITED STATES: Jan.-June 1955. A special summary, with explanatory notes, of the 18th Semi-Annual Report of the USAEC to the Congress of the United States.

RAW MATERIALS: - Domestic Production. New highs in production of uranium ore and concentrates were reached in this period in the U.S. Producing mines totaled 850 in June, 1955, compared to 795 in June, 1954. Processing mills are under construction and/or being operated by Uranium Reduction Co., Mines Development, Inc., U.S. Vanadium Corp., Kerr-McGee Oil Industries, Inc., Vanadium Corp. of America, Climax Uranium Co., Anaconda Copper Mining Co., and other firms, in the U.S. southwest. In Florida, the U.S. Phosphoric Products is building a plant at East Tampa to obtain uranium concentrates as a by-product of the recovery of phosphate chemicals and fertilizers from phosphate rock. Other firms now producing and shipping such by-product uranium include Blockson Chemical Co.; International Minerals & Chemical Corp.; and Virginia-Carolina Chemical Corp.

Foreign Production: The U.S. continued to receive uranium concentrates from the Shinkolobwe mine of the Union Miniere du Haut-Katanga in the Belgian Congo; from a total of 11 South African gold mines; from Canada; from Australia's Rum Jungle ore processing plant; and from the Portuguese processing mill.

SPECIAL NUCLEAR MATERIALS: - With completion of all new gaseous diffusion facilities (for production of uranium-235) except that at Portsmouth, Ohio, production of plutonium, uranium-235, and other special nuclear materials reached new highs in this period. At Hanford, Wash., new plutonium production facilities began operation; and at Savannah River, new facilities went "on stream".

CONSTRUCTION & SUPPLY: - The period saw \$375 million spent by the USAEC for new plant and equipment. This makes the total capital investment by the U.S. in atomic energy facilities approximately \$6.6 billion before depreciation reserves. Except for the feed material expansion program (new plants at Fernald, Ohio; St. Louis, Mo.; and Paducah, Ky.) construction of most major USAEC production plant facilities has been completed or reached its peak, and USAEC construction activity is gradually tapering off. Direct contract awards by the USAEC from July 1, 1951, to Mar. 31, 1955, to "small business" (less than 500 employees) was 3% of the \$5.6 billion in contracts awarded during that period. Sub-contract awards by USAEC cost-type contractors, during that period, to "small business", totaled 38.6% of the \$2.44 billion in sub-contracts let.

NUCLEAR & THERMONUCLEAR WEAPONS: - The weapons program concentrated on designs whose efficiency had been shown as "superior" in the testing program at the USAEC's Pacific proving ground during the Spring, 1954. A contract was given ACF Industries, Inc., for weapons activities (engineering, design, fabrication, testing, etc.) extending from Feb. 1954 to June 1959. The definitive contract replaced a letter contract under which ACF had been doing this work at its Buffalo, N. Y. plant for more than a year.

LEGAL MATTERS: - Consolidated Engineer Corp.'s suit, against the U.S. Government, in connection with certain specific line recorders at the gaseous diffusion processing plant at Oak Ridge, was dismissed by the U.S. Court of Claims during this period. A \$400,000 settlement was made by the USAEC Patent Compensation Board to Glenn T. Seaborg, Joseph W. Kennedy, Arthur C. Wahl, and Emilio Segrè, who had applied for an award based on patent applications covering basic chemical separation processes developed by them prior to their U.S. Government activities in the atomic field. Requests for licenses to construct private atomic facilities were made during this period by Consolidated Edison Co. (to construct and operate for 40 years a nuclear power reactor using enriched uranium-235 as fuel and thorium as a blanket); Armour Research Foundation (construct and operate a reactor for industrial research purposes); Batelle Memorial Institute (construct and operate a modified swimming-pool-type reactor); Naval Research Laboratory (swimming pool reactor); University of Calif. at Los Angeles (water-boiler reactor for medical therapy); University of Michigan (swimming pool reactor for research); Metals & Controls Corp. (facility for fabrication of fuel elements); Pennsylvania State University (swimming pool reactor for research); and Commonwealth Edison Co. of Chicago (construct and operate a 180,000-kw. boiling water reactor for production of electrical energy to be integrated with existing Commonwealth Edison transmission system).

ATOMIC ENERGY IN THE UNITED STATES: Jan.-June 1955 (Cont'd)

NUCLEAR REACTOR DEVELOPMENT:- Of five reactor types favorably considered as heat sources in nuclear power plants, the Pressurized Water Reactor will be the first in operation since it will be the reactor used by Duquesne Light Co. at Shippingport, Pa., where the first nuclear power plant in the U.S. is now being erected. Westinghouse Electric is constructing the reactor proper, while Burns & Ross, Inc. (with J. Rich Steers, Inc., and Hatzel & Buehler, Inc., as associates) are acting as Duquesne's agent-constructor for the turbine generator portion of the plant and as supervisor of construction of these portions of the nuclear plant which may be assigned for construction to Duquesne.

(2). Experiments with the Boiling Water Reactor at Argonne National Laboratory have evolved into plans to install a 3,700-kw. (electrical energy) turbogenerator to be driven by steam from this reactor. An objective is to create a pilot plant of package power type for possible further development. Architect-engineers on this job are Sargent & Lundy, Chicago.

(3). Since nuclear power plants using sodium-cooled, graphite-moderated reactors look promising for production of economic power, the Sodium Graphite Reactor concept is being explored by North American Aircraft, Inc., under a USAEC contract.

(4). Another approach is the Fast Breeder Reactor. Experimental work on this project continues at Argonne National Laboratory.

(5). Work is now underway at Oak Ridge National Laboratory on a Homogeneous Reactor Experiment; it will be the second such reactor at the Laboratory. Contracts have been awarded and work started on all major equipment, including the heat exchangers, core tank, pressure vessel, and circulating pumps.

Industrial Participation: Under the Power Demonstration Reactor Program, four proposals had been received by the USAEC for large reactors to produce in the U.S. commercial electrical energy: (1) Plant in Illinois, proposed by Nuclear Power Group, to erect boiling water reactor plant of 180,000-kw. (2) Plant in northwest Massachusetts, proposed by Yankee Atomic Electric Co., Boston, to erect light water-moderated and cooled reactor plant of 100,000-kw. (3) Plant in Monroe, Mich., proposed by a group headed by Central Hudson Gas & Electric Corp., Poughkeepsie, N.Y., to erect fast breeder reactor plant of 100,000-kw. (4) Plant proposed by Consumers Public Power District, Columbus, Nebr., to erect sodium graphite reactor plant of 75,000-kw.

A number of studies, under the Industrial Participation Program, were started in this period. Baldwin-Lima-Hamilton Corp., and Denver & Rio Grande Western Railroad Co., are studying the engineering, technical and economic aspects of an atomic-powered engine. Combustion Engineering, Inc., is studying reactors of all sizes for central station and special uses. Ford Motor Co. is studying fuel element fabrication for present reactor designs. General Dynamics Corp. is studying power reactors, decontamination services, by product radiation, instrumentation, waste disposal, and related developments. National Rural Electric Cooperative Association is studying the engineering and economic practicability of nuclear power reactors for rural electric systems. Puget Sound Utilities Council will survey nuclear power systems for its member utilities. Seminole Electric Cooperative Association is studying the possibility of economic nuclear power in the Florida area.

The Naval Reactors program originally consisted of two projects: the submarine thermal reactor and submarine intermediate reactor. The program now includes the submarine advanced reactor (by General Electric Co. at Knolls Atomic Power Laboratory, under USAEC contract), and the large ship reactor (by Westinghouse Electric Corp. at Bettis Field, Pa.).

The Army Reactors program has Alco Products, Inc., now working on the Army package power reactor, a prototype of a plant to furnish heat and electricity at remote bases. Study projects are underway on advanced military package power reactors by General Electric Co.; Babcock & Wilcox Co.; Westinghouse Air Brake Co.; Fluor Corp.; Walter Kidde Nuclear Laboratories; Glenn L. Martin Co.; Sanderson & Porter; and others.

The Aircraft Reactors program includes work and facilities at several locations. The aircraft nuclear propulsion test area, for testing aircraft reactors and associated components, is nearing completion at the Argo, Idaho, reactor testing station. At Evendale, Ohio, the facilities of General Electric Co. are used jointly by the USAEC and the Air Force. Also to be used jointly is the new Pratt & Whitney facility, at Middletown, Conn., on which work is now underway.

ATOMIC ENERGY FINANCIAL REPORTS...

NUCLEAR CORP. OF AMERICA FORMED:- This will be the new name of the nucleonics and electronics firm resulting from the merger of Reo Holding Corp., and Nuclear Consultants, Inc., a merger approved last fortnight in New York by directors of Reo Holding. (Reo Holding is the corporate shell remaining after assets of Reo Motors had been sold in 1954 to Bohn Aluminum.) Louis Kurtin, president of Telautograph, who controls Reo Holding, and the resultant Nuclear Corp. of America, is responsible for the new set-up. (Confusion of the new firm with Nuclear Development Corp. of America may now occur, since Nuclear Development Associates recently changed its name to Nuclear Development Corp. of America; both firms are in the nucleonic consulting and products field.)

PROFITS BY NUCLEAR PRODUCTS FIRMS:- Tracerlab, Inc., Boston nuclear products firm, has now shown a profit of \$126,410 for the first half of this year, compared to a loss of \$187,440 in the first six months of 1954. Work has begun on the firm's new plant at Waltham, Mass., where operations of its Boston plants will be concentrated. The company's western division, Richmond, Calif., also plans expansion.... Beckman Instruments, Inc., manufacturer of nuclear products, earned \$1.5 million for the fiscal year ended June 30, 1955, according to Arnold O. Beckman, president. While this is an increase over the \$920,000 the firm earned in the 1954 fiscal year, no dividends on the common stock are likely to be paid in the near future, Dr. Beckman said.

URANIUM-BUYING CONTRACT DEADLINE SET:- The Canadian government will make no new special price contracts with uranium mines after Mar. 31, 1956, unless production can start by April 1, 1957, C. D. Howe, Minister of Trade & Commerce, said in Ottawa last week. (Regular price contracts at the \$7.25/lb. buying price will not support low grade ore mining activities.) In addition, all contracts, at regular and special prices, must be completed by Mar. 31st, 1962, he said. The news had a disturbing effect on the Toronto and Montreal Stock Exchanges, especially the low grade ore mines.

ANALYSES AVAILABLE:- Five Canadian uranium mines--Gunnar, Algoma, Pronto, Consolidated Denison, and Bicroft--are discussed in an analysis by J. H. Crang & Co., 40 Adelaide St., W., Toronto. (The first three are the only Canadian mines now presently selling uranium ores.).... Investing in Atomic Energy "may be obtained from Ralph E. Samuel & Co., 115 Broadway, New York, N.Y. .... A discussion of Kerr-McGee Oil Industries, Inc., is available from Scherck, Richter Co., 520 N. 4th St., St. Louis 2, Mo.

NEW BOOKS & OTHER PUBLICATIONS...on nuclear subjects...

Radioactive Battery, by R. R. Annis. Work at U.S. Signal Corps. Eng. Lab., Ft. Monmouth, N.J. No. FB-111604.--Office of Tech. Services, Wash. 25, D.C. (\$1.00).

Airborne Alpha Contamination Alarm & Recorder. Work at Hanford Works, Wash. No. HW-26503. \$0.20..... The Radioactive Fallout Problem. Civil defense bulletin. No. FCD 1.5:19-1. \$0.05..... Search for Uranium. A brief guide. 84 pages. \$0.25. --Su pt. of Documents, Wash. 25, D. C.

World Development of Atomic Energy. A survey. --Atomic Industrial Forum, Inc., New York 16. (\$5.00).

Radiocarbon Dating. Willard F. Libby. 2nd Edition. New techniques. 175 pages. --University of Chicago Press, 5750 Ellis Ave., Chicago, Ill. (\$4.50).

NEW PRODUCTS...for nuclear work...

PRODUCTS:- Ferrophosphorous, now being produced by Victor Chemical Co., Chicago 6, Ill., as an aggregate for concrete used in protective shielding of atomic "hot cell" installations, produces a density of 290-300 lbs./ cu. ft. the firm states. Chemically inert, concrete shields using the ferrophosphorous produce trustworthy and long-lived protection from radiation, the firm notes.

Commercial production of the entire rare earth dispersion, including thulium, is starting this month at the Newtown, Ohio, plant of Research Labs. of Colo., Inc. Over the next 6-months the firm expects to be able to produce enough thulium for 100,000 thulium X-ray generators. Frank Spedding and Jack Powell developed inventions are being used in the plant.

Sincerely,

The Staff,  
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